Macintosh or MS-DOS?

A synopsis of what MIS managers and other professionals in Fortune 1000 companies have to say.

D/R
DIAGNOSTIC RESEARCH, INC.

Prepared for Apple Computer, Inc.

Introduction

This is a summary of selected information from two studies conducted among Fortune 1000 companies to learn how business computer decision makers and users compare the Apple® Macintosh® and MS-DOS personal computer systems. One study was conducted among MIS managers familiar with both the Macintosh and MS-DOS systems. Participants in the second study were Fortune 1000 professionals from other departments who regularly used either a Macintosh or an MS-DOS personal computer in their work.

The issues in each of the studies were 1) user productivity, 2) ease of use, and 3) training time. Among MIS managers a comparison was also made between Macintosh and MS-DOS systems on training costs.

Both studies were conducted for Apple Computer, Inc. by Diagnostic Research, an independent international research firm. Apple Computer was not identified as the study sponsor.

Summary

The studies clearly indicate that Macintosh is seen to have significant advantages over MS-DOS systems in a number of key areas:

User Productivity

Macintosh makes the producers more productive—and makes them more productive more rapidly. More specifically, Macintosh is judged far easier for learning both the basic system and for learning new applications. And Macintosh is judged easier to install and use than are MS-DOS systems.

Training Time and Costs

Macintosh users learn the basic system twice as fast as do MS-DOS users. As a result, Macintosh cuts the training cost by more than half.

Support Time and Costs

Macintosh requires less than half as many hours of support time as does an MS-DOS system. And MIS managers rate Macintosh significantly better than MS-DOS systems on support costs.

Output

Macintosh increases the visual effectiveness of the final product. MIS managers rate Macintosh significantly higher than MS-DOS on the quality of business graphics and the quality of printed output.

Software

Macintosh users are familiar with and regularly use more software packages than do MS-DOS users.

Personal Fulfillment

Macintosh is seen to be more personally fulfilling and satisfying than MS-DOS systems. More precisely, Macintosh users are significantly higher in their ratings than are MS-DOS users on the enjoyment of using the systems and on giving them confidence as users.

In Conclusion...

Macintosh is easier to learn, is more enjoyable to use, and gives users more confidence. As a result, Macintosh users are more efficient and productive.

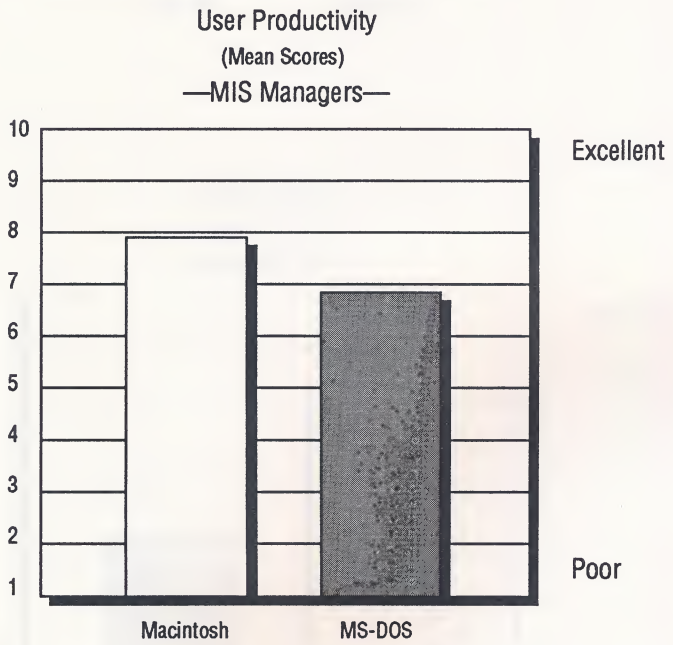
Highlights: User Productivity

In terms of user productivity, the advantage clearly belongs to Macintosh. MIS managers give Macintosh significantly higher ratings than MS-DOS systems on overall user productivity.

More specifically, Macintosh is judged far easier for learning the basic system and for learning additional applications than are MS-DOS systems. Furthermore, Macintosh is easier to install and to use than are MS-DOS systems.

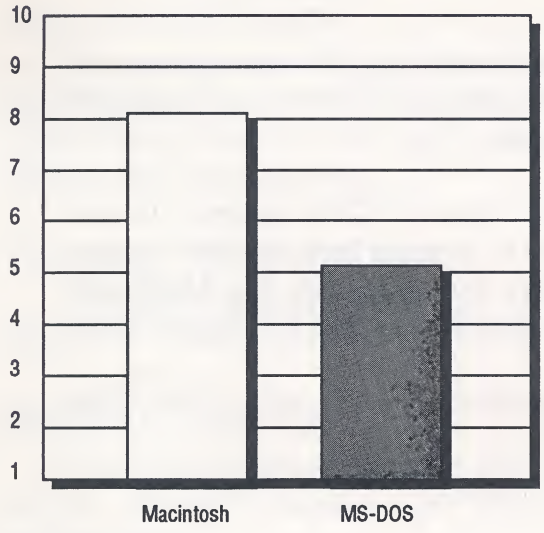
Along with rating Macintosh significantly higher than MS-DOS systems on user productivity, ease of installation, ease of use, and ease of learning both the basic system operations and additional applications, MIS managers also appreciate that Macintosh lessens production costs as a result of the need for less training time and less support time.

In short, Macintosh makes the producers more productive—and makes them more productive more rapidly.

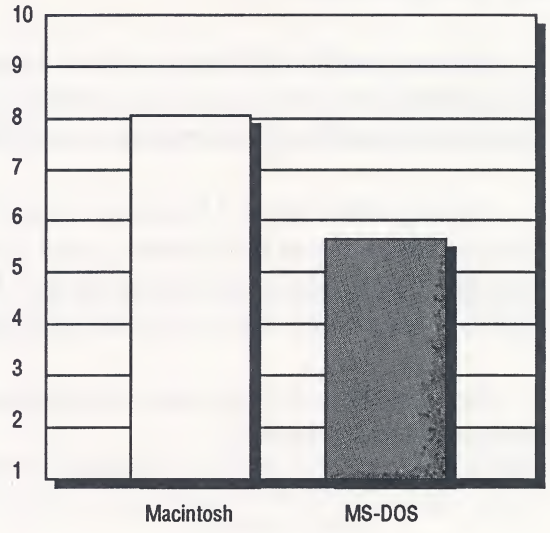


Highlights: User Productivity

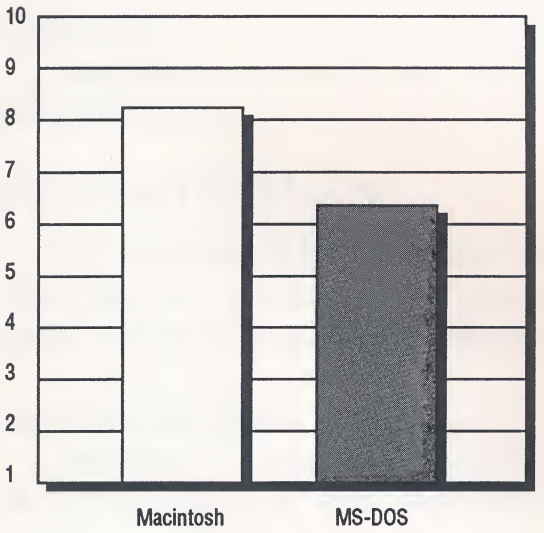
Ease of Learning Basic System Operations
(Mean Scores)
—MIS Managers—



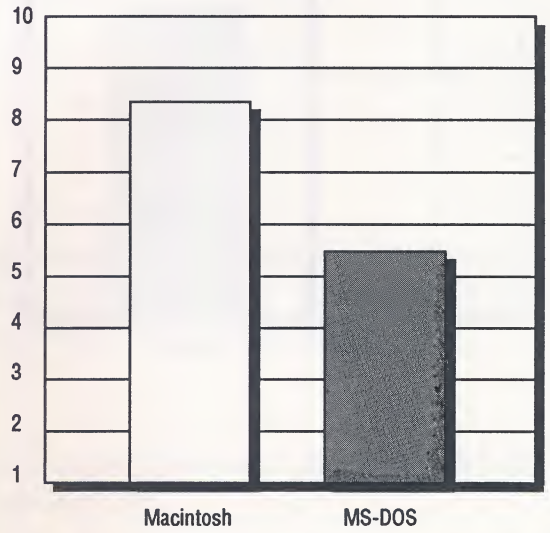
Ease of Learning Additional Applications
(Mean Scores)
—MIS Managers—



Ease of Installation
(Mean Scores)
—MIS Managers—



Ease of Use
(Mean Scores)
—MIS Managers—



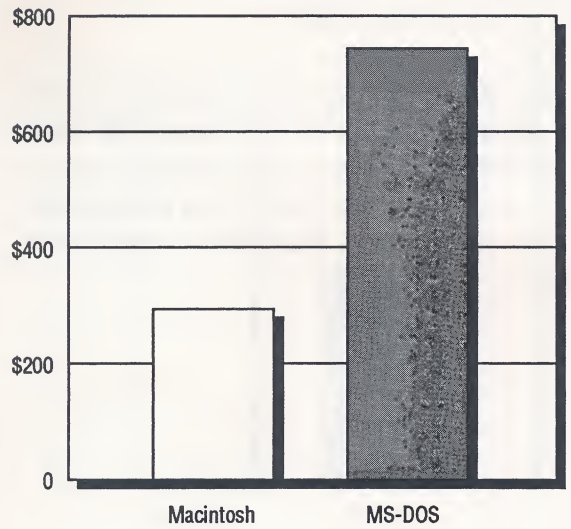
Highlights: Training Time and Costs

Macintosh saves training time and dollars. Fortune 1000 MIS managers report that users learn the basic system operations twice as fast on Macintosh as on MS-DOS systems. And because of this accelerated learning, MIS managers further report that, compared to MS-DOS systems, Macintosh cuts the training cost by more than half.

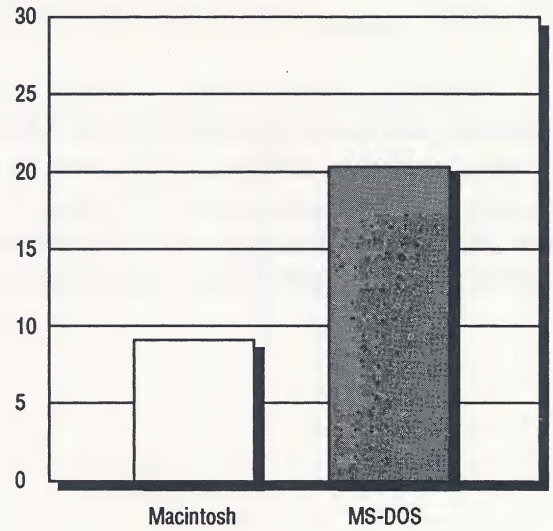
Findings drawn independently from actual end users of Macintosh and MS-DOS systems clearly confirm the report of MIS managers. In fact, Macintosh users learn the basic system operation two and a half times as fast as do MS-DOS users, which is another way of saying that the basic system operation is more than twice as easy to learn on a Macintosh. An additional advantage of a Macintosh is that Macintosh users learn new application software nearly three times faster than MS-DOS users.

Highlights: Training Time and Costs

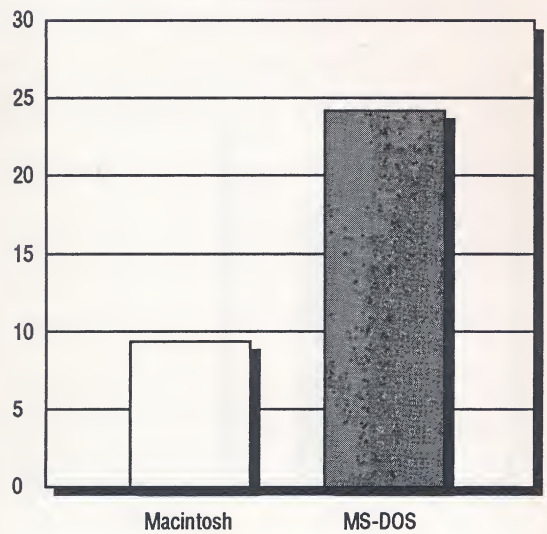
Training Costs per User
(Comparative Averages)
—MIS Managers—



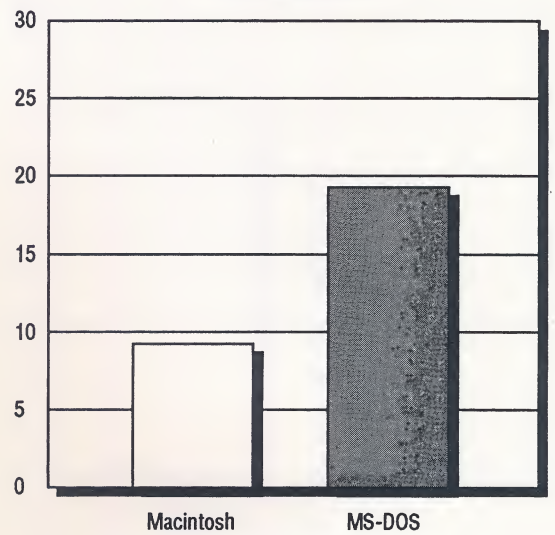
Training Hours Required on the System
(Comparative Averages)
—End Users—



Training Hours Required to Learn New Applications
(Comparative Averages)
—MIS Managers—

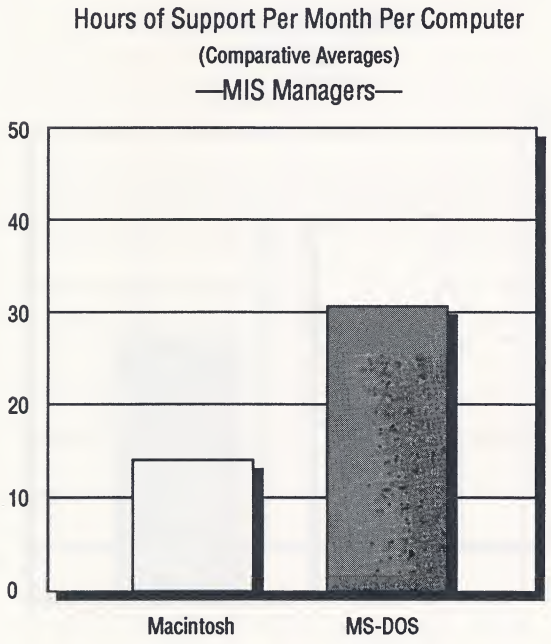


Training Hours per User
(Comparative Averages)
—MIS Managers—



Highlights: Support Time and Costs

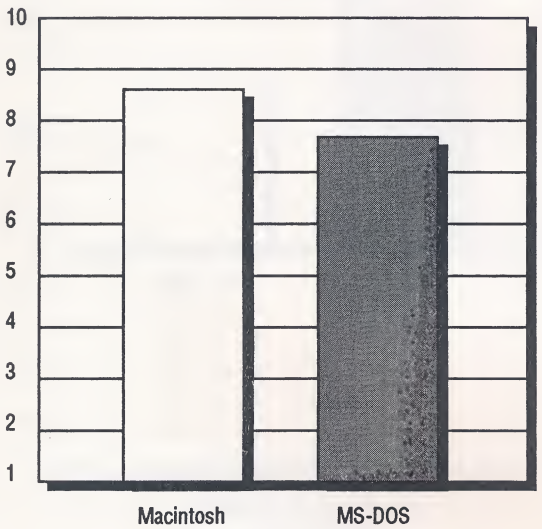
Macintosh cuts support time and costs. Fortune 1000 MIS managers report that, on a monthly average, Macintosh requires less than half as many hours of support time as does an MS-DOS system. MIS managers also gave Macintosh a significantly better rating than MS-DOS systems on support costs.



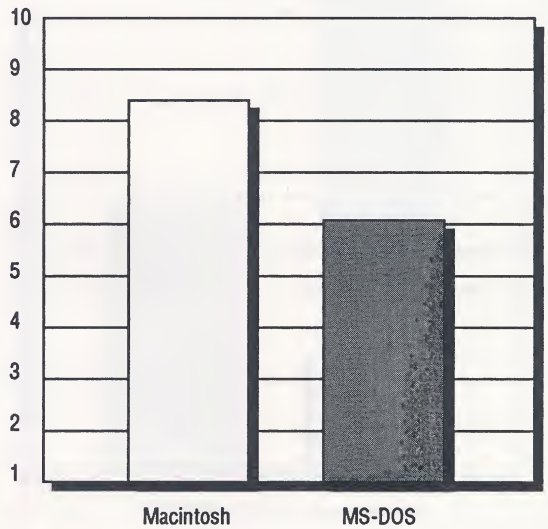
Highlights: Output

Macintosh can boost the visual effectiveness of the final product. On the characteristic, "helping to present your ideas more effectively," Macintosh users rate their system significantly higher than MS-DOS users. And MIS managers rate Macintosh significantly higher than MS-DOS systems on *both* the quality of business graphics and the quality of printed output.

Presenting Ideas More Effectively
(Mean Scores)
—End Users—



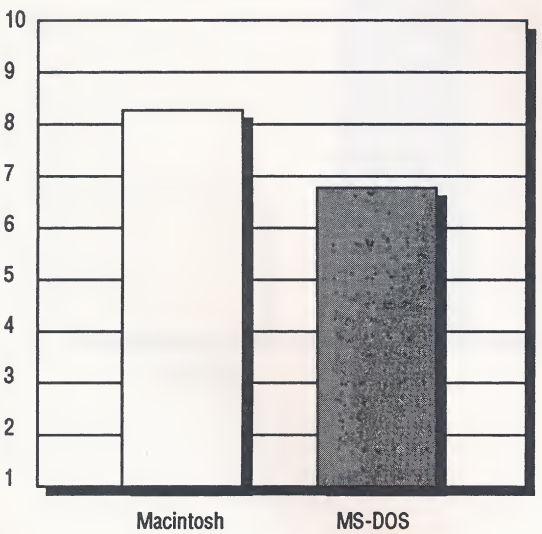
Quality of Business Graphics
(Mean Scores)
—MIS Managers—



Excellent

Poor

Quality of Printed Output
(Mean Scores)
—MIS Managers—



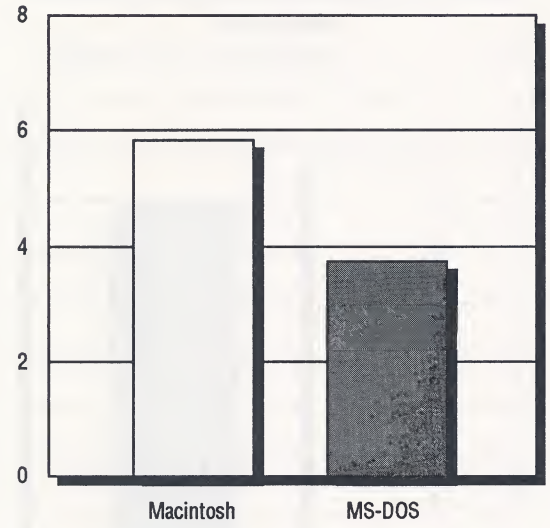
Excellent

Poor

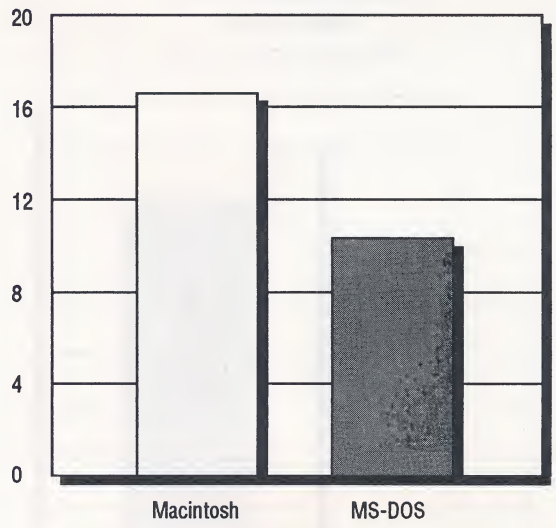
Highlights: Software

Macintosh users are familiar with 57 percent more software packages and use more than one and a half times as many different applications *vis-à-vis* MS-DOS users.

Number of Software Packages Normally Used on System
(Comparative Averages)
—End Users—



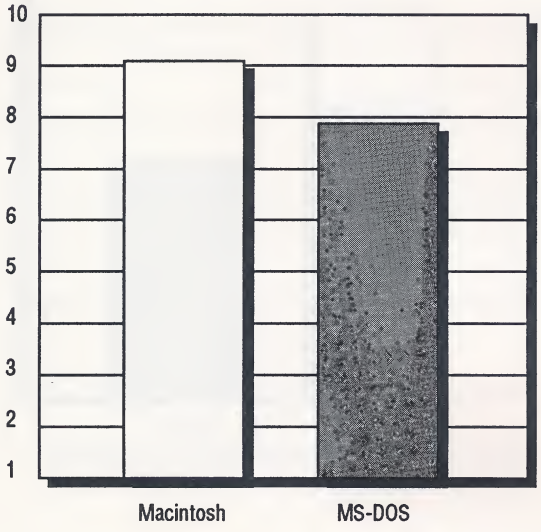
Number of Applications Familiar With
(Comparative Averages)
—End Users—



Highlights: Personal Fulfillment

Macintosh is seen to be more personally fulfilling and satisfying than MS-DOS systems. Macintosh users rate their system significantly higher than do MS-DOS users for being enjoyable to use and for giving them confidence in using their computer. And MIS managers strongly concur, giving Macintosh superior ratings for overall end user satisfaction with system performance.

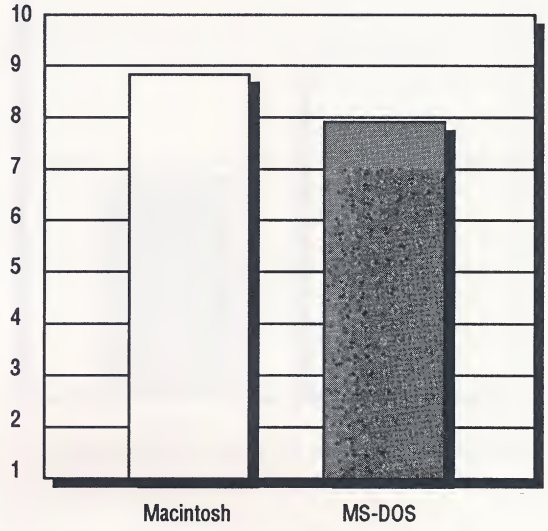
Being Enjoyable to Use
(Mean Scores)
—End Users—



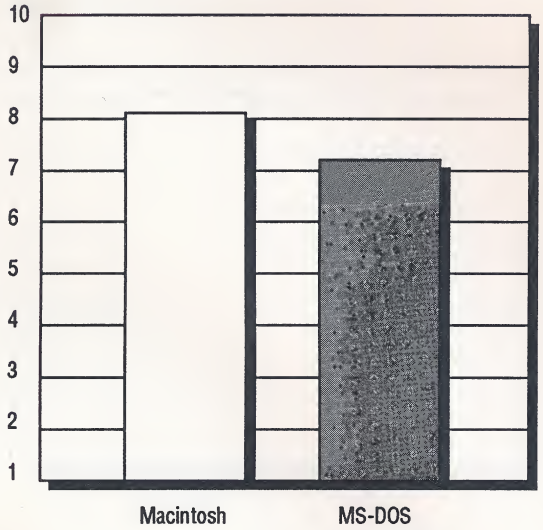
Excellent

Poor

Giving You Confidence in Using Your Computer
(Mean Scores)
—End Users—



Users' Overall Satisfaction with Performance
(Mean Scores)
—MIS Managers—



Excellent

Poor

Summary Detail: MIS Managers

The following table shows areas in which MIS managers rated the Macintosh system significantly higher than the MS-DOS system. (See Note below.)

ATTRIBUTE	— MEAN RATING* — Macintosh	MS-DOS	SAMPLE (N =)**	SIGNIFICANCE LEVEL***
Cost				
Training Costs	7.47	5.13	(94)	*0. 999+*
Support Costs	6.96	6.16	(95)	*0.998*

Note:

Significance Testing

To test the hypothesis that the population means were equal, we calculated the T-statistic for paired samples by dividing the difference between the two means by the standard error of the population mean difference. Using a table based on the sampling distribution of the T-statistic, it becomes possible to calculate the probability that a difference of the magnitude demonstrated would occur if the population means were actually equal. To ensure the most stringent significance testing, only respondents who were able to rate both systems on any one attribute were included in the mean and in significance testing for that particular attribute. Differences were declared significant at the 95% confidence level.

Interpretation of Data

In interpreting the data, it is important to keep in mind that the information is based on MIS managers' perceptions, rather than cut-and-dried technical evaluations.

* Mean rating on 1 to 10 scale; 1 = Poor and 10 = Excellent

** Sample size varies because respondents unable to rate both systems on any particular attribute were dropped from that paired comparison.

*** The designation 0.999+ indicates instances where significance approaches 1.000.

Summary Detail: MIS Managers

ATTRIBUTE	— MEAN RATING — Macintosh	MS-DOS	SAMPLE (N =)	SIGNIFICANCE LEVEL
Ease of Learning/ Using/Installation				
Ease of Use	8.37	5.56	(97)	*0.999+*
Ease of Installation	8.22	6.38	(97)	*0.999+*
Ease of Learning Basic System Operations	8.18	5.15	(98)	*0.999+*
Training Time Required to Learn Basic System Operations	8.16	5.13	(98)	*0.999+*
Ease of Learning Additional Applications	8.09	5.66	(96)	*0.999+*
Overall Productivity/ Satisfaction				
Users' Overall Satisfaction with System Performance	8.12	7.21	(98)	*0.999+*
User Productivity	7.91	6.71	(97)	*0.999+*
Output				
Quality of Business Graphics	8.40	6.09	(93)	*0.999+*
Quality of Printed Output	8.28	6.78	(94)	*0.999+*

ATTRIBUTE	— MEAN RESPONSES — Macintosh	MS-DOS	SAMPLE (N =)	SIGNIFICANCE LEVEL
Comparative Averages				
Hours Training Per User	8.80 hrs	19.44 hrs	(94)	*0.998*
Hours Support Per Month Per Computer	13.97 hrs	30.46 hrs	(92)	*0.999+*
Training Costs Per User	$293.62	$764.84	(76)	*0.999*

Summary Detail: End Users

The following table shows areas in which Macintosh users rated their system significantly higher than MS-DOS users rated their system. (See Note below.)

ATTRIBUTE	Macintosh MEAN*	(N =)	MS-DOS MEAN*	(N =)	SIGNIFICANCE LEVEL**
Ease of Learning/Using					
Being Easy to Use	9.08	(173)	7.67	(170)	*0.999+*
Learning the Basic Operating System Easily	8.79	(173)	6.70	(166)	*0.999+*
Giving You Confidence in Using Your Computer	8.70	(170)	7.80	(169)	*0.999+*
Learning Additional Applications Easily	8.47	(170)	7.01	(164)	*0.999+*
Learning Your First Software Application Easily	8.43	(173)	6.82	(167)	*0.999+*

Note:

Significance Testing

A standard two-tailed T-test was used to determine the significance of the difference of means. To test the hypothesis that the population means were equal, we calculated the T-statistic by dividing the difference between the sample means by the sum of the sample standard deviations. Using a table based on the sampling distribution of the T-statistic, it becomes possible to calculate the probability that a difference of the magnitude demonstrated would occur if the population means were actually equal. Differences were declared significant at the 95% confidence level.

Interpretation of Data

In interpreting the data, it is important to keep in mind that information is based on end users' perceptions, rather than cut-and-dried technical evaluations.

* Mean rating on 1 to 10 scale; 1 = Poor and 10 = Excellent

** The designation 0.999+ indicates instances where significance approaches 1.000.

Summary Detail: End Users

ATTRIBUTE	Macintosh MEAN	(N =)	MS-DOS MEAN	(N =)	SIGNIFICANCE LEVEL
Enjoyment/Communication					
Being Enjoyable to Use	9.04	(172)	7.94	(170)	*0.999+*
Presenting Your Ideas More Effectively	8.68	(172)	7.71	(170)	*0.999+*
Improving Communication in Your Department	7.20	(160)	6.67	(163)	*0.967*
Comparative Averages					
Approximate Hours Required to Learn the Basic System Operation	8.11 hrs	(173)	20.39 hrs	(155)	*0.999+*
Approximate Hours Required to Learn a New Software Application and Be Comfortable Using It	8.74 hrs	(168)	24.30 hrs	(157)	*0.998*
Number of Software Packages Normally Used on System	5.84	(172)	3.71	(169)	*0.999+*
Number of Applications Familiar With, Including Programs Known but Seldom Utilized	16.28	(173)	10.36	(164)	*0.993*

Sampling and Methodology

Sample Specifications: MIS Managers
Sample specifications were as follows:

- Currently employed as MIS managers.
- Work for a Fortune 1000 company.
- Company owns at least 10 Macintosh and 10 MS-DOS computers.
- Personally involved in decisions regarding the company's purchase of computer equipment.
- Sufficiently familiar with Macintosh and MS-DOS systems to evaluate their performance (self-reported).
- Those affiliated with an advertising agency, marketing research firm, or computer hardware/software company were excluded.

Sample Specifications: End Users
Sample specifications were as follows:

- White collar professionals (defined as working in one of the departments listed on the next page, at the management level or below, but excluding all secretaries/clerical staff).
- Work for a Fortune 1000 company.
- Regular Macintosh or MS-DOS users:
  - — Use their personal computer at least five hours per week.
  - — Have used operating system for three months or more.
  - — Familiar with more than one software application.
- Those affiliated with an advertising agency, marketing research firm, or computer hardware/software company were excluded.
- Those working as MIS/Data Processing managers, microcomputer specialists, or computer specialists, or in any capacity specializing in computer systems, were excluded.

Sampling and Methodology

Original contact was made through one of the following titles:

Financial Manager	Human Resources/Personnel Manager
Accounting Manager	Creative Services Manager
Marketing Manager	Marketing Research Manager
Manager of Legal Affairs	Sales Manager
R&D Manager	Manager of Engineering

When the first contact was unavailable or unqualified, another member of the department was contacted, and so on, until the department itself was determined to be unqualified. At that point the next department was selected and the process was repeated.

Sample Selection

The sampling frame for both MIS managers and for end users was Computer Intelligence Corporation's data file of Fortune 1000 companies.

Diagnostic Research acquired a representative subsample of these sites and screened for qualified participants.

Methodology

Using a 10-point scale, qualified MIS managers rated both the Macintosh and MS-DOS systems on a series of attributes or dimensions. In addition, actual amounts were obtained for each system on the following:

- Approximate hours of training time per user
- Estimated training costs per user
- Approximate hours spent supporting an average computer in a typical month

Qualified end users, also using a 10-point scale, rated either the Macintosh or MS-DOS systems on a series of attributes or dimensions. In addition, actual amounts were obtained for each system on the following:

- Approximate hours to learn basic system operation
- Approximate hours, on average, to learn and become comfortable with a new software application
- Number of software packages usually used on system
- Number of applications familiar with, including programs known but seldom utilized

Interview Dates

Interviews were conducted during the period November 11, 1987, to January 15, 1988.

Data Processing

Data were cleaned using standard procedures to check for proper use of skip patterns and internal consistency. All tabulations were checked thoroughly.

To ensure comparability of means, it was necessary to examine the distribution curves. This inspection determined that the curves peak around the mean, indicating that the 10-point scales were being used in a comparable manner for the two systems (Macintosh and MS-DOS) and that the scales reflect a reasonably linear continuum between points.

The work you are holding was prepared on a Macintosh® II computer using Microsoft Word, Aldus PageMaker, and Adobe Illustrator 88 software. It was proofed on a LaserWriter® IINTX printer.